

SUMMARY OF EXPERIENCE AND METHODOLOGY

My name is James J. Berni. I am currently a Special Agent for the Federal Bureau of Investigation (FBI). I declare that the following is true and correct to the best of my knowledge:

1. I have served as a Special Agent for the FBI since 2007. Since 2015, I have been assigned to a team of investigators who specialize in the review of cellular call detail records with an emphasis of interpreting and illustrating the towers the phone used during a given period of time. This team of FBI Special Agents provide cellular record analysis and technological assistance to local, state, and federal law enforcement, including mapping, analytical report, and expert testimony at trials as part of the FBI Cellular Analysis Survey Team (“CAST”). In addition to historical analysis, I have also been trained in real time tracking and forensic analysis of cell phones.
2. As part of my duties, I conduct training regarding cellular technology and record analysis for various law enforcement personnel.
3. Historical cell site data analysis is based on the premise that the approximate (not exact) location of a cell phone can be determined by examining the records generated by the cell phone when it was used. These records are called CDRs (call detail records). When a cell phone communicates with a cell tower (voice, text message or data session), a record is produced showing the cell tower and sector the phone utilized to complete the call, text or data session. The cell tower and sector has a specific number combination that is unique to that geographic area (no other tower within the network will have these same numbers). All of the service providers maintain a “tower list”, archived by month and year, which provide the exact location of towers within their network. The tower list contains additional information that is used to determine the orientation of the tower sectors. This is called an “azimuth.” The azimuth is a number (in degrees) which shows the center line for the sector. For example, a sector with a 30 degree azimuth would be pointing (on a clock face) at the 1 o’clock position.
4. Three things are needed to conduct historical record analysis; a set of CDRs, a tower list, and address information/facts concerning the crime. The CAST team illustrates this information onto a mapping platform similar to Microsoft Map Point or Google Earth to illustrate the approximate location of the phone. The illustration of the tower and sector is commonly represented by a symbol known as an open wedge. The wedge shows the direction radio frequency is moving away from the tower along the center line of the azimuth. These shapes have been used since the beginning of historical cell site analysis by cell phone service providers, who advocate the use of “wedges” to illustrate orientation and can demonstrate the potential coverage area of a cell site. In some cases, service providers may have additional data they can provide law enforcement, including per call measurement data (signal timing information collected by the network) and the approximate GPS coordinate of a cellphone when it was used for a call, a text,



or a data session. This data can also be used to further define the approximate location of a cell phone.

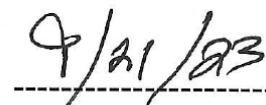
5. After plotting relevant events from the CDRs on a map, address information and known facts are then considered. Results and/or conclusions are compiled in an official report and/or presentation for use by investigators or at trial. The maps in the official report and/or presentation demonstrate the general area where the cellular phone associated with the CDR was located on the date and at the time the records were generated.

6. As a rule, cell phones (not the network) select which tower to communicate with. The phone decides which tower to communicate with based on one overriding factor; the tower with the strongest, best quality signal is the tower the phone will initially communicate with. This is a principal rooted in science, engineering and logic. In analyzing historical cell site data, the CDRs indicate the tower that was, in fact, chosen by the phone regardless of whether that particular tower was the closest to the phone at the time the call was generated. In other words, the CDRs accurately record the tower that provided service to the phone. Although the tower listed in the CDRs is not always the closest tower, the phone must have been within the “footprint” of the tower that appears in the call detail record. The footprint is an area of radio frequency energy that is dominant in a particular area. The CDR therefore identifies which tower had the strongest signal at the time a cellular communication event occurred and that particular tower will provide the *approximate* location – not the *exact* location – of the phone at the time the record was generated.

7. Based on my experience and the collective experience of the FBI CAST Team, historical record analysis has repeatedly proved highly effective at determining the approximate location of cellphones at the time calls, text messages or data sessions are conducted and the CDRs are generated. Historical record analysis has been used in many high profile investigations, used to find fugitives, has located kidnap victims and lost children, and assisted investigators with recovering evidence and proving or disproving people’s statements. It is a widely accepted, reliable law enforcement tool.



Special Agent James J. Berni



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